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PCT-Application WO PCT/IB02/01044

Applicant / Owner: Nokia Corporation

Title: Method and device for executing a communication attempt in..

In response to the Official Communication pursuant to rule 66 PCT dated February 14, 2003.

**I. New Documents**

Enclosed, please find, an set of amended claims on the basis of which further Examination shall be carried out.

The new claim 1 is disclosed in the pending claims 1, 3 and 4 and in the specification on page 3, lines 18 to 27 and the description of figure 1B, on page 7, section 2.

The new claim 2 is disclosed in the pending claims 2 and 3

The new claims 3 to 9 are disclosed in pending claims 5 to 11.

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The new claim 10 is disclosed in the pending claims 12, 13, 3 and 4 and in the specification on page 3, lines 18 to 27 and the description of figure 1B, on page 7, section 2.

The new claim 11 is disclosed in pending claim 14.

The new claim 12 is disclosed in the pending Claims 15, 13, 3 and 4 and in the specification on page 3, lines 18 to 27 and the description of figure 1B, on page 7, section 2.

The new claim 13 is disclosed in pending claim 16.

The pending claims 3, 4 and 13 has been deleted.

## **II. The invention as claimed**

The present invention relates to a method and a device for executing a communication attempt with a mobile terminal device in accordance with the attainability status of said mobile terminal device in a cellular communication network having a Short Message Service Center SMSC by the steps of: querying said SMSC in said cellular network for obtaining an attainability status of said mobile terminal device, by evaluating connection related data stored in said SMSC, wherein said connection related data being related to messages pending for delivery to said mobile terminal device, and delivering said communication attempt to said mobile terminal device in accordance with said attainability status.

So, the present invention requests if there are messages pending for delivery to said mobile terminal device stored in said SMSC. In the simplest case, there are no messages pending for the mobile terminal device, i.e. the device can be attainable or no messages have been sent until the device has entered an "unattainable" status. In another case, the network device e.g. queries an SMSC to find out if there are already Short Messages SMs for a

terminal device pending for delivery, and cancels or queues the delivery, if there are SMs pending for delivery. If the device already rejected to receive a SM, an additional SM delivery would surely fail, and therefore can be economized.

It may occur that the delivery of the SMS pending is delayed, because of a delay in the updating of the Home Location Register, or a delay in the updating of the SMSC, so the fact that there is one SM pending may not reflect the actual attainability state of the mobile terminal device. In case of e.g. 10 or more SMs pending, it may be expected that the mobile telephone is actually not attainable. So according to the present invention a single request is started whether there are messages pending for said mobile terminal and based on the information received an indication of the possibility to deliver a communication attempt may be derived.

### **III. State of the Art**

The Examiner denies novelty and the presence of an inventive step of the subject matter of claims 1 to 16 in view of one reference.

DI: WO 0156312 (Lathinen, Pasi et al.) 29 January 2001

Document D1 discloses a method and a device to determine the status of a mobile station in a mobile telephone network by querying the home location register (HLR) of a mobile communication network, to check the status of a subscriber. D1 does not mention to query the SMSC for the number of SMs pending for delivery to said terminal.

### **IV. Novelty**

The independent claims 1, 10 and 12 describe a method and a device to determine the attainability status on basis of the number of messages pending for said mobile terminal device in an SMSC, wherein use is made of the number of short messages pending for delivery in said SMSC as distinguishing feature.

In contrast to D1, a query of the HLR is not described in the amended independent claims. A query of the HLR in the present invention is only optional in case the information obtained by querying the SMSC alone is regarded as not sufficient to determine the attainability of the mobile terminal i.e. in case that none or only a few messages are pending.

D1 does not disclose to query only a SMSC for Short Messages pending for a mobile terminal. So, a query for the number of messages that are stored in the SMSC and that are pending for said terminal device is novel. Therefore, the new independent claims 1, 10 and 12 are novel in respect to D1.

#### **V. Inventive step**

In order to assess the presence or absence of an inventive step the problem-solution approach shall be applied.

The problem underlying the present invention is to provide a method and a device capable of determining the attainability of a mobile terminal device without disturbing it, and without using air interfaces. In particular the present invention aims to reduce the data traffic required to obtain this information.

This problem is solved according to the present invention by a query of an SMSC for messages pending for delivery to a mobile terminal device. In the simplest case the network device e.g. queries an SMSC to find out that there are no messages pending, and can therefore start a delivery attempt. If there are already SMs for a terminal device pending for delivery, the delivery attempt can be canceled or queued. If the device already rejected to receive a previous SM and this SM has been queued, an additional SM delivery would fail, and therefore may be economized.

D1 describes at no place that the number of messages pending in the SMSC are checked or evaluated to determine the attainability status of a terminal device, and therefore D1 alone can not suggest an artisan to perform a query of messages pending for delivery to a terminal in a SMSC.

It may happen that the delivery of an SM pending is delayed, because of a delay in the updating of the SMSC, so the fact that there is one SM pending may not be reflecting the actual attainability state of the mobile terminal device. In case of e.g. 10 or more short messages pending, the mobile telephone can be regarded as actually not attainable.

So, the method of the present invention relies not on querying the HLR, and can therefore economize one two way data exchange between the SMSC and the HLR and can reduce the required data traffic by a factor of two, as compared with the method disclosed in D1.

As the normal or straight forward approach for improving a the collection of data related to the attainability status according to D1 would be to gather more and more precise data, in contrast the present invention that is based on reducing the usage of network resources for the cost of loosing information content to provide a preliminary pre-selection by sorting out devices that are most probable to be not capable of receiving a message. D1 describes that data of the HLR is to be checked to obtain information about the actual status of a mobile terminal device. The present invention is based on a determination if other attempts to deliver a communication already have failed. The preset invention and D1 gather information from different places different content.

The fact that there are messages pending for delivery does not represent a one-to-one relationship to the actual attainability status of the respective terminal device. So in contrast to D1 the attainability status can only be derived in case that at least one or more messages are pending for transmission. If there are no messages pending it can not definitively be derived that the mobile device is actually attainable.

So, in contrast to the disclosure of D1, the request according to the present invention can only provide an indication of the actual attainability status of the mobile device. This low and vague information content obtained provides only a necessary but not sufficient information required for a successful delivery of a communication attempt, but this information can be obtained using a minimum of network resources. A single data exchange between the service provider and the SMSC is sufficient to determine this prerequisite for a successful communication attempt or an indication of a probable impossibility of a successful delivery of a SM.

The vague information that can be obtained by the method of the present invention in combination with the minimum of effort required to gather this information can not be regarded as being suggested by the disclosure of D1, as the information checked in the HLR of communication network result in an information directly related to the actual status of the mobile terminal, as the information in the HLR are regularly updated. The present invention can not put forward such clear statements, except in the case of a clear un-attainability.

In view of the above arguments it is assumed that the Examiner's objections have been overcome, and it is therefore respectfully submitted that the new set of claims 1 to 13 as are acknowledged as inventive. Therefore, issuance of a favorable IPER is kindly requested. Should the Examining Division consider further amendments to be necessary, an informal interview or an oral hearing is requested.



Dr. Alexander Straus  
(Patent Attorney)

Enclosures: set of amended claims 1 to 13

Application no:  
Applicant:

PCT/IB02/01044  
Nokia Corporation

### **Amended Claims**

- 5 1. Method for executing a communication attempt with a mobile terminal device in accordance with the attainability status of said mobile terminal device in a cellular communication network having a Short Message Service Center SMSC by the steps of:
  - querying said SMSC in said cellular network for obtaining an attainability status of said mobile terminal device, by evaluating connection related data stored in said SMSC, wherein said connection related data being related to messages pending for delivery to said mobile terminal device, and
  - 10 - delivering said communication attempt to said mobile terminal device in accordance with said attainability status.
- 15 2. Method according to claim 1, wherein said query of said SMSC further comprises a query of a Home Location Register (HLR) of the cellular communication network for an attainability status of said mobile terminal device and wherein said attainability status is obtained by evaluating connection related data stored in said HLR.
- 20 3. Method according to claim 1 or 2, wherein said connection related data are related to the connection state of said mobile terminal device.
4. Method according to claim 1 to 3, wherein said data are location related.
- 25 5. Method according to anyone of claims 1 to 4, wherein said evaluation comprises the evaluation of data related to the communication to be attempted.
6. Method according to anyone of the preceding claims, wherein said query is executed by initiating a Short Message delivery to said SMSC, said Short Message being destined for said mobile terminal device.
- 30 7. Software tool for executing a communication attempt with a mobile terminal device in accordance with the attainability status of said mobile terminal device in a cellular communication network, comprising program code means for carrying out the steps of anyone of claims 1 to 6 when said software tool is implemented in a program run on a Short Message Service Center, Service Center or a network device.
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8. Computer program for executing a communication attempt with a mobile terminal device in accordance with the attainability status of said mobile terminal device in a cellular communication network, comprising program code means for carrying out the steps of anyone of claims 1 to 6 when said program is run on a Short Message Service Center, a Service Center or a network device.
9. Computer program product comprising program code means stored on a computer readable medium for carrying out the method of anyone of claims 1 to 6 when said program product is run on a Short Message Service Center, a Service Center or a network device.
10. Short Message Service Center (SMSC), connected to a cellular communication network comprising a Home Location Register (HLR), comprising components for receiving messages, forwarding messages, and querying HLR data of a mobile terminal device, characterized by:
- a component for obtaining data related to the attainability status of a mobile terminal device,
  - component for evaluating said data related to the attainability status of a mobile terminal device, to obtain a attainability status by evaluating data being related to messages pending for delivery to said mobile terminal device, and
  - a component for delivering messages according to said obtained data related to the attainability status of said terminal device.
11. Short Message Service Center (SMSC) of claim 10, further comprising a component for generating a message according to results from the said evaluating component.
12. Network device connected to a Short Message Service Center (SMSC) of a cellular communication network, comprising components for sending and receiving messages, characterized by:
- a component for generating a message for querying a SMSC for data being related to messages pending for delivery to a mobile terminal device and transferring said data to said network device,
  - a component for obtaining an attainability status from said transferred data, and
  - a component for delivering communication attempts according to said attainability status.
13. Network device according to claim 12, wherein said cellular network further comprises a Home Location Register (HLR), and wherein said network device further comprises a



component for generating a message for inducing said SMSC to query HLR data of said mobile terminal device and transferring said data to said network device.